

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

STRÖM & GULLIKSSON IPC AB  
PO Box 793  
S-220 07 Lund  
SUEDE

**PCT**

**NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

(PCT Rule 71:1)

Date of mailing  
(day/month/year)

28.10.2004

Applicant's or agent's file reference  
W 1874-152 LB

**IMPORTANT NOTIFICATION**

International application No.  
PCT/EP 03/06798

International filing date (day/month/year)  
27.06.2003

Priority date (day/month/year)  
01.07.2002

Applicant

TELEFONAKTIEBOLAGET LM ERICSSON (PUBL.) ET AL

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international preliminary examining authority:



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Authorized Officer

Riepert, U

Tel. +49 89 2399-7588



# PATENT COOPERATION TREATY



## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

Applicant's or agent's file reference W 1874-152 LB	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/06798	International filing date (day/month/year) 27.06.2003	Priority date (day/month/year) 01.07.2002
International Patent Classification (IPC) or both national classification and IPC H04L1/18		
Applicant TELEFONAKTIEBOLAGET LM ERICSSON (PUBL.) ET AL		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 8 sheets, including this cover sheet.  
  
☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
  
 These annexes consist of a total of    sheets.

3. This report contains indications relating to the following items:
  - I    ☒ Basis of the opinion
  - II   ☐ Priority
  - III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV   ☐ Lack of unity of invention
  - V    ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI   ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application

Date of submission of the demand  30.01.2004	Date of completion of this report  28.10.2004
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Horbach, C  Telephone No. +49 89 2399-7928  

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP 03/06798

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-17 as originally filed

**Claims, Numbers**

1-38 as originally filed

**Drawings, Sheets**

1/5-5/5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 03/06798**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 24

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 24 are so unclear that no meaningful opinion could be formed (*specify*):

**see separate sheet**

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-38
	No: Claims	
Inventive step (IS)	Yes: Claims	4,7,26
	No: Claims	1-3,5,6,8-23,25,27-38
Industrial applicability (IA)	Yes: Claims	1-38
	No: Claims	

2. Citations and explanations

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP 03/06798

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see separate sheet

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP03/06798

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

- 1 The subject-matter of claim 24 is not clear (Article 6 PCT) because this claim numeral appears twice.

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

- D1: ZHAO SULI: 'The applications of retransmission schemes in the radio interface of mobile communication systems' FIFTH ASIA-PACIFIC CONFERENCE ON COMMUNICATIONS AND FOURTH OPTOELECTRONICS AND COMMUNICATIONS CONFERENCE. APCC/OECC'99. PROCEEDINGS. CONFERENCE - VITALITY TO THE NEW CENTURY (IEEE CAT. NO.99EX379), PROCEEDINGS OF APCC/OECC'99 - 5TH ASIA PACIFIC CONFE, pages 500-503 vol.1, 1999, Beijing, China, Beijing Univ. Posts & Telecommun, China
- D2: EP-A-0 973 292 (NORTEL NETWORKS CORP) 19 January 2000
- D3: HUI ZHAO ET AL: 'A hybrid-ARQ protocol with adaptive rate error control' PROCEEDINGS TENCON '93. 1993 IEEE REGION 10 CONFERENCE ON 'COMPUTER, COMMUNICATION, CONTROL AND POWER ENGINEERING' (CAT. NO.93CH3286-2), PROCEEDINGS OF TENCON '93. IEEE REGION 10 INTERNATIONAL CONFERENCE ON COMPUTERS, COMMUNICATIONS AND AUTOMATION, B, pages 108-112 vol.3, 1993, New York, NY, USA, IEEE, USA ISBN: 0-7803-1233-3
- D4: US 2001/034209 A1 (ROYER CLAUDE ET AL) 25 October 2001
- D5: WO 02 21757 A (MALKAMAIEKI ESA ;NOKIA CORP (FI)) 14 March 2002
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- 2 D2 shows a method for scheduling a decoding process (figures 5 and 8) of coded data blocks transmitted over a wireless link in a communication network characterized by the steps of:

- storing a coded data block in a queue if all decoders of a cluster of iterative decoders are unavailable (column 13, lines 18-22; figure 8, steps 802, 806),
- decoding the coded data block in a decoder of said cluster (column 10, lines 27-34; figure 5, step 506).

Claim 1 differs by adding the steps of

- returning any coded data block being unsuccessfully decoded to said queue; and
- combining said unsuccessfully decoded data block with a corresponding retransmitted coded data block.

In this way claim 1 adds further error correction method steps.

The objective problem may therefore be regarded as a further reduction of packet error rate.

The solution proposed in claim 1 does not involve an inventive step (Article 33(3) PCT) for the following reasons:

Faced with the objective problem the skilled person would consider to use an ARQ method in combination with a forward error correcting code as suggested by claim 1 because such a combination is well known in the art as Hybrid ARQ and is described e.g. in D1 (page 500, right hand column, last paragraph).

- 3 The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent apparatus claim 19; consequently, the subject-matter of this claim does not involve an inventive step (Article 33(3) PCT).
- 4 Dependent claims 2, 3, 5, 6, 8-18, 20-23, 25 and 27-38 do not add inventive matter to the claims upon which they are dependent (Article 33(3) PCT) as their subject-matter is either directly derivable from the above cited documents (parallel cluster of decoders, ARQ protocol with time limit in physical layer, adaptation of number of iterations) or concerns normal design measures (FIFO or "oldest data block first" principle, number of decoders according to bit rate, 15 Mbps).
- 5 The subject-matter of claim 4, referring back to claim 3 which itself depends on claim 1, involves an inventive step for the reasons:

- 5.1 According to claim 3 the method of claim 1 is further enhanced in that the transmission between a physical layer of a stack of protocols in a communication apparatus and a physical layer of a stack of protocols in a communication network is controlled by a protocol requiring an ACK/NACK-report of the transmission within a predetermined time limit.

Such an ARQ protocol in the physical layer with time limit is known from D1 (page 501, first paragraph of left column and third paragraph of right column).

Claim 4 additionally prescribes that a NACK report is transmitted to the transmitter of the data block if the time limit is reached before the stored data block is moved to any of the decoders of the cluster.

By this additional feature a timeout of the ARQ protocol is avoided.

- 5.2 Thus the objective problem consists of avoiding a timeout of the ARQ protocol.

- 5.3 Faced with the objective problem the skilled person would have considered to provide more decoders to the cluster of decoders or to increase the time limit. Sending a NACK report if the time limit for decoding expires is not obvious nor hinted at by the available prior art.

- 6 The subject-matter of dependent claim 7 when depending on claims 3 and 1 involves an inventive step for the same reasons as already given for claim 4.

- 7 The subject-matter of dependent claim 26 when depending on claims 23 and 19 involves an inventive step for the same reasons as already given for claim 4.

- 8 None of the documents D3-D5 deals with scheduling decoders or with iterative decoding:

D3 describes Hybrid ARQ techniques using a combination of a Hamming code and a BCH code. It deals with the details of the additional redundancy sent in the retransmissions.

D4 proposes various combinations of data rate variations, coding rate variations and partial data transmissions for the retransmissions of an ARQ protocol.

D5 deals with soft combining of repeatedly transmitted Acknowledgment packets.



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP03/06798

Further remarks:

- 9 Claims 25-26 when dependent on claim 22 are not clear (Article 6 PCT) because they refer to a time limit which is not defined in the claims on which it depends. The subject-matter of these claims is only understandable if they are dependent on claim 23. Thus, the assessment of novelty and inventive step is based on this dependency.
- 10 The independent claims are not in the two-part form required by Rule 6.3 PCT, having a pre-characterising part that correctly reflects the nearest prior art.
- 11 Contrary to the requirements of Rule 5.1(a)(ii) of the PCT, documents D1 and D2 cited above have not been acknowledged and briefly discussed in the opening part of the description.
- 12 The term WCDMA is known as an abbreviation for "Wide-band **Code** Division Multiple Access", contrary to "Wide-band **Call** Division Multiple Access" cited in page 1 line 23.